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THE STATUS OF THE COLUMBIA TIGER BEETLE (*CICINDELA COLUMBICA* HATCH) IN IDAHO (COLEOPTERA: CICINDELIDAE)

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Frank M. Beer (1971) reported the apparent extermination of the Columbia Tiger Beetle (*Cicindela columbica* Hatch) from a rather large segment, if not all, of its habitat due to dam construction on the Columbia and Snake Rivers in Oregon, Washington and Idaho. Originally described by Melville Hatch (1938), this species was reported to be locally abundant on sandbars of those rivers from The Dalles, Oregon eastward to just west of Lewiston, Idaho. Beers found no evidence of the beetles after flooding of the habitats by dam backwaters. However, he did find all of the Tiger Beetles that had been associated with the Columbia Tiger Beetle prior to flooding. Those species found to have re-established themselves on the shores of the new reservoirs were *Cicindela oregona* LeConte, *repanda* Dejean, *hirticollis* Say, *tranquebarica* Herbst, and *cinctipennis* LeConte.

Vernon Clifford (1979), a well-known Tiger Beetle collector from Washington, reported that he was not aware of any existing populations of *C. columbica* as all former sites to his knowledge had been flooded by backwaters. Leffler and Pearson (1976) reported the species in their work on the Tiger Beetles of Washington. However, they made citations from the literature and made no observations of living populations. They noted, "Dr. L. Rogers reported no populations (of *C. columbica*) in the Columbia on river islands above Pasco. Construction of dams along the Columbia and Snake Rivers appears to be having an adverse effect on the species."

The first known literature citation of the Columbia Tiger Beetle in Idaho was by Norman L. Rumpp (1967), who found the beetle on August 10, 1962 at two locations along the Salmon River. The first site was 2 miles south of Whitebird, Idaho County, and the second site was 1 mile southwest of Slate Creek (8.4 mi N Lucile), also in Idaho County.

It was feared that subsequent construction on realignment of U.S. Highway 95 near the sandbars on which *C. columbica* had been found may have harmed those populations. During August 1977, Gary Shook visited all major sandbars on the easterly side of the Salmon River from Riggins north to Whitebird. *C. columbica* was found at two locations: 1 mi SW Slate Creek,

Idaho County and 2.4 mi SW Slate Creek, Idaho County. Thus the presence of the Columbia Tiger Beetle in Idaho was confirmed.

No investigation for *C. columbica* had been made between the Salmon River locations in Idaho downriver to the former locations near Clarkston, Washington. Much of the approximately 161 km (95 mi) of intervening river is generally inaccessible except by raft or kayak.

During the last two days of July and the first two days of August, 1979, a raft trip was made down the Lower Salmon River and the Snake River. The trip started just below the Rice Creek bridge in Idaho County, Idaho, and ended at Heller's Bar near Rogersburg, Washington, a distance of 95 km (56 mi) by river.

The Trip

On July 30, 1979, the trip down the two rivers began with the launching of two inflated rafts and an aluminum dory. During the next four days forty-nine (49) sandbars were inspected for Tiger Beetles. Figure 1 grapically illustrates the collection site locations.

Sandbars inspected were at least 30 m in length. Many smaller bars were noted, but were recently emerged due to the natural seasonal drop in the rivers' flows or were otherwise deemed inappropriate to inspect. Not all bars 30 m or over were investigated, but the 49 observed represented at least 40% of the larger sandbars seen.

Inspection generally consisted of a boundary or perimeter transect: walking the shoreline at the moist sandwater interface, then up and around the dry outer boundary inshore. Extensive grid transects were made at the White House Bar (Site No. 111) and Maloney Creek Bar (Site No. 117) in an effort to estimate the rather large populations of *C. columbica* found there.

After tentative identification, random specimens were netted for in-hand verification. Two hundred and four specimens of all species were collected and retained as vouchers. They were represented by 80 *C. oregona,* 51 *C. repanda,* 31 *C. hirticollis,* and 42 *C. columbica.* All voucher specimens were retained in the author's collection or were deposited in the entomological collection of the California Academy of Science, Golden Gate Park, San Francisco, California.

The elevation near the Rice Creek Bridge was 4251 m (1296 feet) above sea level. The Rogersburg, Washington, elevation was 2706 m (825 feet) above sea level. That represented a drop of 1545 m (471 feet) in the total trip length.

The Salmon River canyon has slopes generally in excess of 30%, with many areas, especially the Blue Canyon, of vertical walls. Hackberry, Mountain Mahogany, with some Ponderosa and Jack Pine and Doulgas Fir represented the major trees.

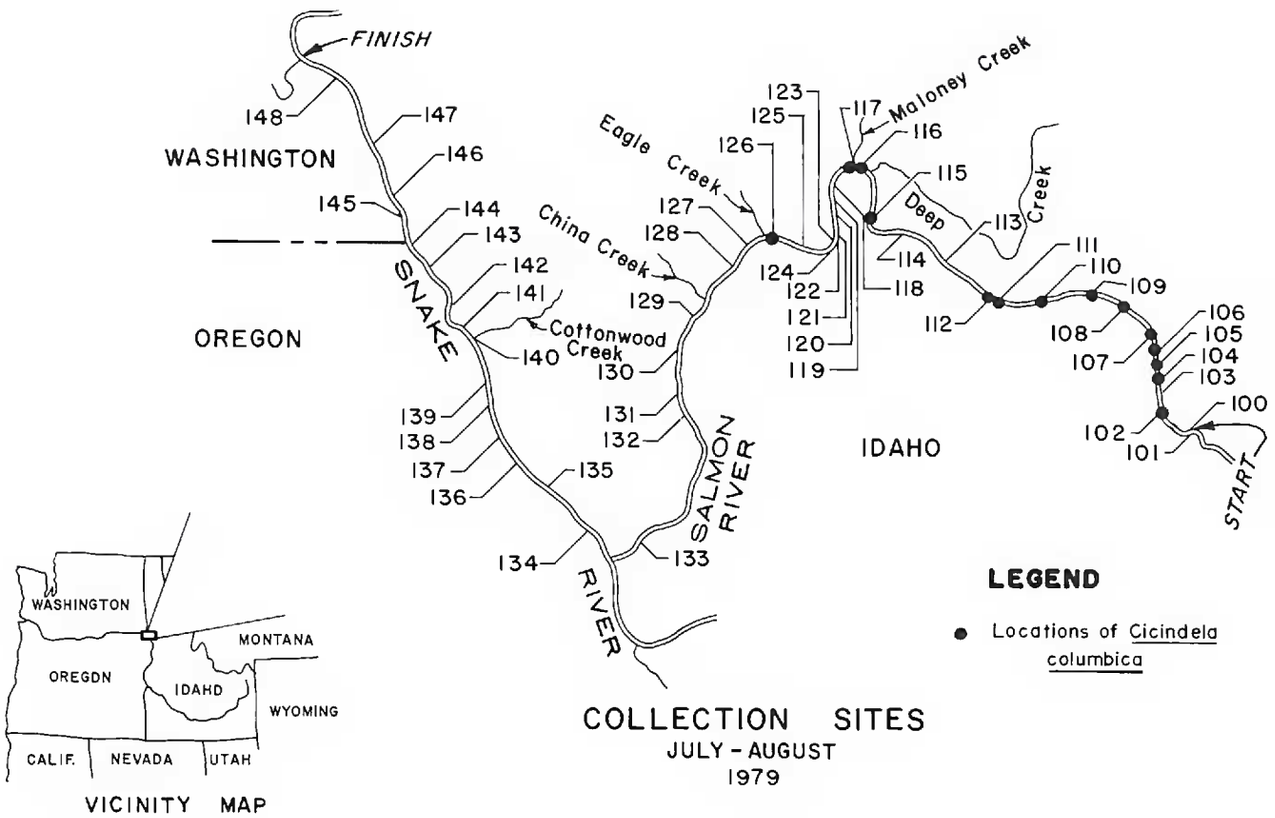

Fig. 1.

The Hells Canyon of the Snake River had similar slope configurations, although the river bed was considerably wider than that of the Salmon River. Trees and vegetation in general were much less than that noted on the Lower Salmon River, decreasing downstream.

Observations

Periodically, the air, water and sand surface temperatures were recorded with the following observed results (in degrees Celsius, °C): All temperatures were taken with a dial-type metal thermometer that had been previously calibrated between 4° and 60°C. The sand temperatures were of dry sand and were taken 6 to 18 mm below the actual sand surface. Moist sand near the waterline tended to follow the air temperature and did not exceed 26° to 27°C.

Although *C. hirticollis* and *C. repanda* were observed on sand with surface temperatures of 44° to 47°C, they would occasionally fly onto the hotter 60°C sand. There they would remain but a second or two in one place, making short hops until cooler sand was attained.

C. columbica was commonly found seeking food on sands ranging in temperature from 26° to 42°C. They were not seen to fly onto the hotter sands as did the other species. When disturbed, the Columbia Tiger Beetle often flew out over the river or up or down the moist area of the sandbar.

One interesting note was the extended period of activity observed of *C.*

columbica and *C. repanda* after sandbars had been completely shaded and after sunset. At Collection Site No. 110 near Mile 10, the sandbar was completely shaded by 7:30 PM MDST as the sun had dropped below the surrounding mountain tops at that time. *C. repanda* persisted in activity on the sand until after 9:00 PM when seeing was becoming difficult. On the Maloney Creek Bar (Site No. 117), complete shading occurred at 7:30 PM. *C. columbica* was observed still active until 8:45 PM.

The largest significant populations of *C. columbica* occurred at White House Bar (Site No. 111) and at Maloney Creek Bar (Site No. 117). These bars were quite extensive, being approximately 400 m long and extending back from the river over 100 m. They were generally not entirely flooded during the spring run-off in May, June and early July. However, it was felt by the boatmen that the sandbars may receive periodic total inundation during those infrequent years of very high run-off, such as 1974.

The population of *C. columbica* at White House Bar was estimated at greater than 200 beetles. The population at Maloney Creek Bar was estimated at greater than 400 beetles. Estimates were based on observing four grid transect areas equal to $^1/_{10}$ the total estimated sandbar area. The great difficulty in population estimates of this very active, winged beetle can be appreciated by anyone who has collected it. The degree of confidence, therefore, has been placed with the lowest observation numbers.

Ten (10) of the forty-two (42) *C. columbica* collected from all sites were obviously teneral.

Where *C. columbica* was found it was generally gregarious within the species and, although mixing with the other tiger beetle species did occur, it tended to be more isolated from those other beetles.

C. tranquebarica was observed at only three sites, but this wide-ranging species is often found more abundantly earlier in the season. The specimens found may have represented the last of the spring populations which had moved onto the cooler, moister sandbars from the surrounding area.

The Oregon Tiger Beetle (*Cicindela oregona* LeConte) was by far the most abundant species observed, being found on 94% of the sites inspected.

Conclusion

The Columbia Tiger Beetle, *Cicindela columbica* Hatch, is generally found in large, viable populations in Idaho within the Lower Salmon River canyon from near Slate Creek to Eagle Creek. It was not found below Eagle Creek on the Salmon River and was found nowhere on the Snake River to Heller's Bar. It generally occupies older, well-established bars that extend back from the river sufficiently to generally not be inundated by spring run-off waters. Although the beetle is generally intraspecifically gregarious, it does share its area with four other species of Tiger Beetles: *Cicindela oregona, C. repanda, C. hirticollis* and *C. tranquebarica*.

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